The Federal Communications Commission
Washington DC 20554

In the Matter of	)	
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Empowering Parents and Protecting Children in an Evolving Media Landscape	)	MB Docket No. 09-194
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Notice of Inquiry	)	
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Comments of Digimarc Corporation

Introduction

Digimarc Corporation ("Digimarc") is pleased to submit these comments in response to the above-captioned Notice of Inquiry ("NOI"). Located in Beaverton, Oregon, Digimarc is an established innovator in digital watermarking technology. The company offers a wide range of technology solutions, including content identification technologies, to provide consumers with more choice and access to content when, where, and how they want it. Additionally, Digimarc develops solutions, licenses its intellectual property, and provides development services to business partners across a range of industries, including national security, marketing, media and entertainment. Digimarc has an extensive intellectual property portfolio, with more than 560 U.S. and foreign patents, and more than 420 patents pending in digital watermarking, content identification and management, and related technologies. More information about Digimarc can be found on its website, located at www.digimarc.com.

Through its work in digital watermarking technology, Digimarc has become an expert on content identification and a strong advocate for providing a safe media and entertainment environment for children. In this regard, Digimarc has consistently offered its expertise and knowledge to the Federal Communications Commission ("FCC") on parental control technologies and media content identification issues. Most recently, Digimarc provided comments and reply comments in response to the Commission's inquiry on the Child

Safe Viewing Act of 2008.[1] (MB Docket No. 09-26). In addition to its FCC related activities, Digimarc has also contributed to the National Telecommunication and Information Administration's Online Safety Technical Working Group at the Department of Commerce. Digimarc also participated in the deployment and creation of the V-Chip in 2003 and worked closely with the Internet Content Rating Association (ICRA) to encourage content providers to flag adult-related content. ICRA is now known as the Family Online Safety Institute or FOSI. Digmarc's interest in addressing the questions raised by the FCC in this NOI is a reflection of its belief that digital watermarking of content is an effective, broad-based solution to empower parents and protect children in today's evolving media landscape.

The Technology

Digimarc previously provided an overview of digital watermarking technology in its comments to the FCC's Notice of Inquiry on the Child Safe Viewing Act, *MB Docket No. 09-26.* However, in the interest of convenience, we provide relevant details regarding digital watermarking technology below.

A digital watermark is a digital code that can be embedded in all forms of content, imperceptible to people, but easily detectable by computers, networks, and other electronic devices such as mobile phones. When a device reads a digital watermark, the watermark can trigger a rules-based response that allows the content to be either viewed or not viewed. In traditional DRM solutions, companies can track the distribution path, convey copyright ownership, and allow or block access to their content. Through a system deploying watermarks, parents can achieve a similar result to protect their children from inappropriate content. Conceptually, it is somewhat analogous to the traditional notion of a watermark on paper, in which a barely perceptible mark is applied during manufacture that establishes the origin of the paper on later inspection. Similarly, digital watermarks applied to digital content are persistent, staying with the content through manipulation, copying, and format conversions.

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[1] *Implementation of the Child Safe Viewing Act; Examination of Parental Control Technologies for Video or Audio Programming* (MB Docket No. 09-26)

The "data" carried in the watermark can be semantic (i.e., carry meaning in its own right), simply a reference number, or in some cases, both. For example, it is common for part of the watermark to be informative and carry a reference number, such as 1234. The reference number may point to an online ratings database, such as the Motion Picture Rating System. In this instance, the viewing device could be set to trigger an automated action, such as "Block Content" when the watermark is detected and read. This action is initiated when the information in the watermark is cross-referenced with the database with the instructions on what to do. In the case of content with an "R rating," a watermark enabled system could carry out the desires of the parents to have all "R-rated" content blocked when their child attempts to view it. Furthermore, if the device lost connection to the Internet, the fallback would be "Block," giving parents further peace of mind.

Digital watermarks are well known within the media industry and are used by many prominent media corporations. For example, Nielsen Media Research uses digital watermarking to automate the television ratings system and authenticate broadcasts. As a result of their efforts, nearly all televised broadcasts now use digital watermarks to track viewership among Nielsen Families (those families that opt-in for audience measurement). Moreover, Arbitron uses similar technology for audience measurement in radio broadcasting. Major record labels such as SonyBMG, Universal Music Group, and Warner Music also use digital watermarks to identify and trace back to leaks of promotional pre-release music onto the Internet. Digital watermarking is also used by a consortium of central banks to deter the counterfeiting of currency.

Digital Watermarks Can Empower Parents and Protect Children in an Evolving Media Landscape

In addition to their current commercial uses, digital watermarks can empower parents and protect children in today's constantly changing media landscape. As explained above, digital watermarks work by identifying content that is viewed though a range of media devices. Because digital watermarks are not channel or device-specific, digital watermarks offer benefits to parents that other parental blocking technologies, like the V-Chip, do not. For example, they can work on a multiple platforms such as gaming

devices, computers, music players, smart phones and televisions. Another important benefit is that digital watermarks can be used in tandem with any rating system a parent may want to employ. Digital watermarks can also help identify and target approved "group-like" content for parents and children and block both programming and advertised content. Finally, digital watermarks also could protect children from materials that were pirated online.

I. Digital Watermarking Is a Content-Persistent Technology That Is Compatible With Multiple Platforms

In the NOI, the FCC requested comments on the pace of innovation, specifically whether innovation in parental control technologies is proceeding at a pace that ensures that parental control features and devices are being developed at a rate that meets evolving parental and caregiver needs. (¶ 49) In response to this inquiry, Digimarc respectfully submits that in today's media environment, any new parental control feature must be able to work across multiple platforms and cannot be limited to just one distribution channel. Parents must have the ability to block content wherever their children can access it, whether on their game device, computer, smart phone, or family television.

Digital watermarking is the *only* technology available that is capable of operating across multiple platforms.[2] This is because digital watermarks are *content-persistent*, rather than channel or device-specific. A digital watermark enables the content itself to be a permanent, intrinsic and declarative part of the advance blocking solution. In other words, digital watermarks become part of the content and therefore are always part of the blocking solution.

The importance of developing a parental control technology that is content-specific technology cannot be overstated. With the ubiquity of broadband across the United

[2] We note the FCC's assertion that there is no available technology solution currently available in the market (¶ 44). Digimarc acknowledges that we cannot point to digital watermarking technology being used as a parental control solution today, but solutions based on digital watermarking technology are currently deployed globally for similar purposes.

States and the proliferation of multi-functional devices in homes and out of homes, a blocking solution *must* be content-specific rather than hardware, software, or distribution-specific. Otherwise children could easily circumvent any blocking technology by using a different media source, forcing parents to adopt different blocking technologies for each device and creating confusion. By making the content itself part of the solution, regardless how the content is acquired or consumed, parents are able to control access to the material. Additionally, because it is not tied to a specific hardware or software component, digital watermarking can be integrated into future digital distribution paths and devices that have yet to be developed.

II. Digital Watermarking Can Be Used With All Ratings Systems

In the NOI, the FCC requested comments on parents' familiarity with and understanding of various ratings systems currently in use. (¶ 48) Digimarc submits that a problem with current parental control technologies is that each media platform employs a different ratings system that parents must learn and understand in order to protect their children. Digital watermarking, however, is easily adaptable to all media platforms and allows parents to tailor what their children are exposed to in accordance with their own cultural and social values.

Because digital watermarks identify content, parents can use any rating system of their choosing in connection with digital watermarking technology to limit their children's access to objectionable material on all platforms. This includes rating systems and the associated labels that content distributors (satellite, cable, or the Internet) or vendors of player devices provide. Parents could also use digital watermarks in connection with ratings systems and content labels distributed by third-party entities, such as children's groups, churches, cultural centers, and other organizations. Put simply, a parent can block or allow content based on any set of labels of their choosing. Consequently, digital watermarks are compatible with current ratings systems and provide flexibility to parents to use the ratings system with which they are most familiar and comfortable. Further, digital watermarks would enable parental controls to be future proof, in that rating systems and content tags could be upgraded and adapted over time.

III. Digital Watermarking Can Be Used to Identify and Target Approved "group-like" content

The FCC also inquired in the NOI what means parents, teachers, and children have to select or "white list" beneficial content for children. (¶ 26) The NOI also asked whether any of these "white list" tools could be extended to other media platforms. (¶ 26) Digimarc respectfully submits that digital watermarking could be used to identify appropriate content in order to create a "white list" of acceptable programming. Through digital watermarking, acceptable content can be identified at multiple points during transmission and at the device itself. Accordingly, parents will be able to receive more information about the content their children are viewing and will be able to better manage their children's content consumption more accurately and effectively. When working with services that create "white lists," such as TiVO's KidZone, digital watermarks help identify and select content that is safe for viewing with greater accuracy and assist in rating systems for those entities or organizations that provide such services.

Moreover, because digital watermarking is content-specific and platform independent, such services can ultimately transcend specific devices or distribution mechanisms. This provides confidence that within the domain of player devices and content distributors available to their children, parents can block or allow content as desired.

IV. Digital Watermarking Can Be Used to Identify Programming and Advertised Content

In the NOI, the FCC also inquired whether it was feasible to block advertisements that were inappropriate for children on various media platforms. (¶ 40) Although Digimarc cannot comment on the economic impact of blocking commercial advertisements as requested in the NOI, it respectfully submits that digital watermarking technology can be used to block inappropriate content within advertisements on various media outlets, such as offensive language, sexual content, unwanted products, and violence. Digital watermarks identify the content itself—the purpose of the content, whether it is scheduled programming or an advertisement, is irrelevant. Digital watermarks also can employ the same ratings system to filter all content that is distributed, regardless of its

intended purpose. As a result, through the use of digital watermarks, parents can protect their children from *all* objectionable content.

V. Digital Watermarks Can Help Prevent Children From Accessing Illegally Copied Copyrighted Work

In addition to the topics mentioned above, Digimarc submits that digital watermarking could also be an important tool for parents to protect their children online by identifying illegally distributed copyrighted work. Although not specifically mentioned in the NOI, children's access to unauthorized copies of copyrighted work is a growing problem and digital watermarks could assist parents in limiting their legal liability for illegal access. Many child safety groups have spent significant resources to educate children about piracy and respecting the work of others.

VI. Digital Watermarks Provide Protection at Minimal Expense

When compared to other parental control technologies, digital watermarking technology is not only a more capable tool but also a more cost-effective one. The widespread use of the technology demonstrates that digital watermarking can provide an effective solution to difficult technical problems at *de minimus* expense. For example, the technology has been deployed globally by an international consortium of central banks for literally mills (not even a cent) per item of content, including the licensing costs. The detectors have been deployed globally with no material cost increases in the hardware and systems in which they reside. Similarly, cost has not been prohibitive for its deployment by the motion picture industry, the television and radio monitoring industry, the music industry, or even governmental entities (including state DMVs). Therefore, based on its previous usage, it is clear that the use of digital watermarking will not be cost prohibitive when employed as a parental control technology.

When the day is done, the cost argument is a bit of a red herring. ***Any*** solution, even a change to the current options, will come with costs and tradeoffs. Some of those tradeoffs will include device-specific requirements, efforts to achieve uniformity of standards, and costs of porting the solution from device-to-device and from platform-to-platform. Watermarking is the only platform independent content identification system

(not container or distribution path specific) currently being proposed for consideration. As such, in aggregate, it is almost guaranteed to be less expense, as all other approaches require re-invention for differing platforms. That cost might be hidden or subsidized, but it will be a cost.

Conclusion

Digimarc appreciates the FCC's continued work on empowering parents and protecting children in today's media environment. We look forward to continuing to assist and advise the FCC in this important undertaking and are committed to protecting children as we move into an increasingly interconnected and interoperable society.